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**Hedgehog pathway gene expression during early development of the molar tooth root in the mouse.**

**Khan M, Seppala M, Zoupa M, Cobourne MT.**

Department of Orthodontics, The Dental Institute of King's College London at Guy's, King's and St. Thomas', Guy's Hospital, London SE19RT, UK.

Sonic hedgehog is a secreted protein important for many aspects of embryonic development. In the developing tooth, Shh expression is restricted to the epithelial compartment and plays an important role during both initiation and subsequent coronal morphogenesis. We have investigated the expression of Shh and constituent members of the signalling pathway during early development of the molar tooth root in the mouse and find the presence of transcripts in Hertwig's epithelial root sheath. These epithelial cells of the root sheath and the surrounding apical mesenchyme of the dental papilla and follicle also expressed the Shh receptor Ptc1, agonist Smo and Gli downstream transcriptional effectors; however, this response occurred over short range. In contrast, the Shh antagonists Hip1 and Gas1 were both expressed at a distance from these responding cells, in more peripheral regions of the developing root. Transcripts of the Skn acyl transferase lacked specific expression in early root structures.

PMID: 17095302 [PubMed - indexed for MEDLINE]

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Expression patterns of Hedgehog signalling pathway members during mouse palate development. [Development. 2006]

The Shh signalling pathway in tooth development: defects in Gli2 and Gli3 mutants. [Development. 1998]

Restriction of sonic hedgehog signalling during early tooth development. [Development. 2004]

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